

WATER RESOURCES IN MOROCCO

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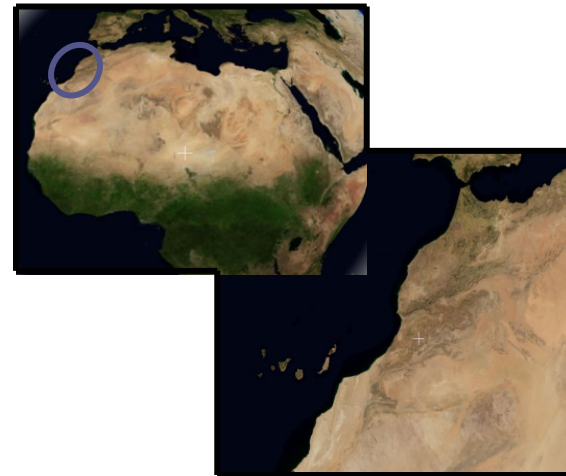
جامعة شعيب الدكالي

Université Chouaïb Doukkali



Population of over 33 million and an area of 710 850 Km².

Morocco's economy is considered a relatively liberal economy, based on agriculture, tourism, mining and services sector.



REGIONAL CONTEXT



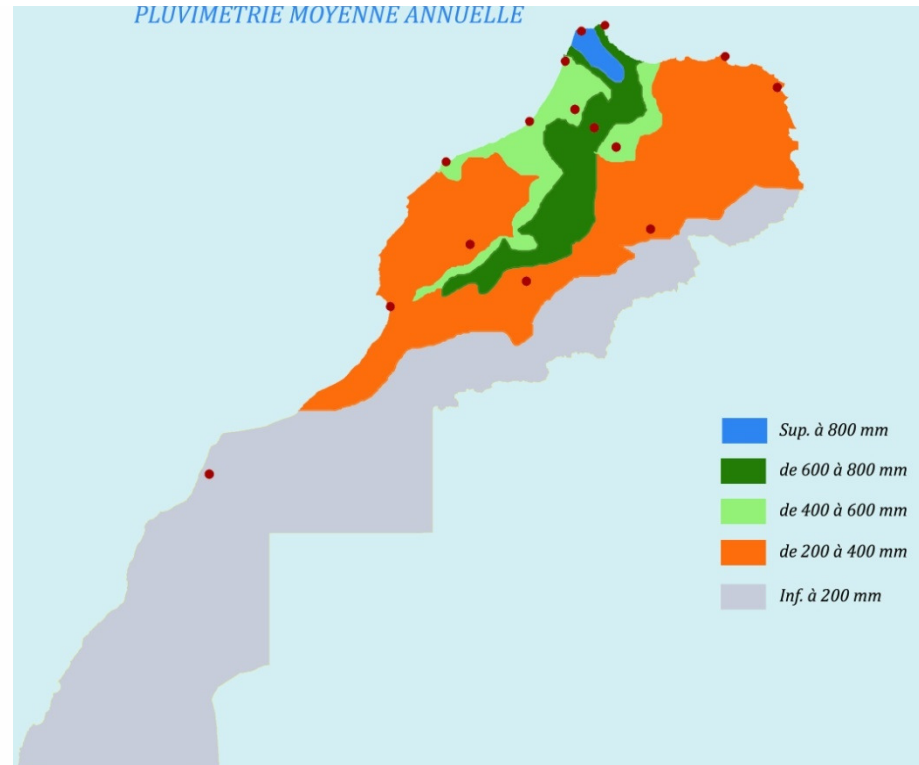
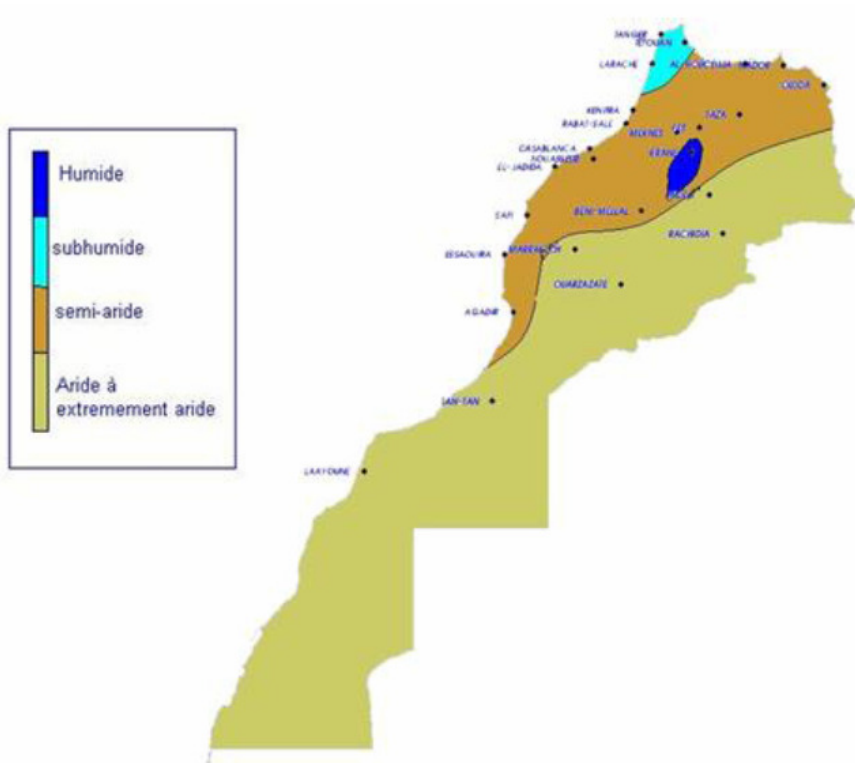
➤ The natural water resources in Morocco are among the lowest in world

➤ potential is estimated at 21 billion m³ per year, equivalent to 730 m³ / capita / year.

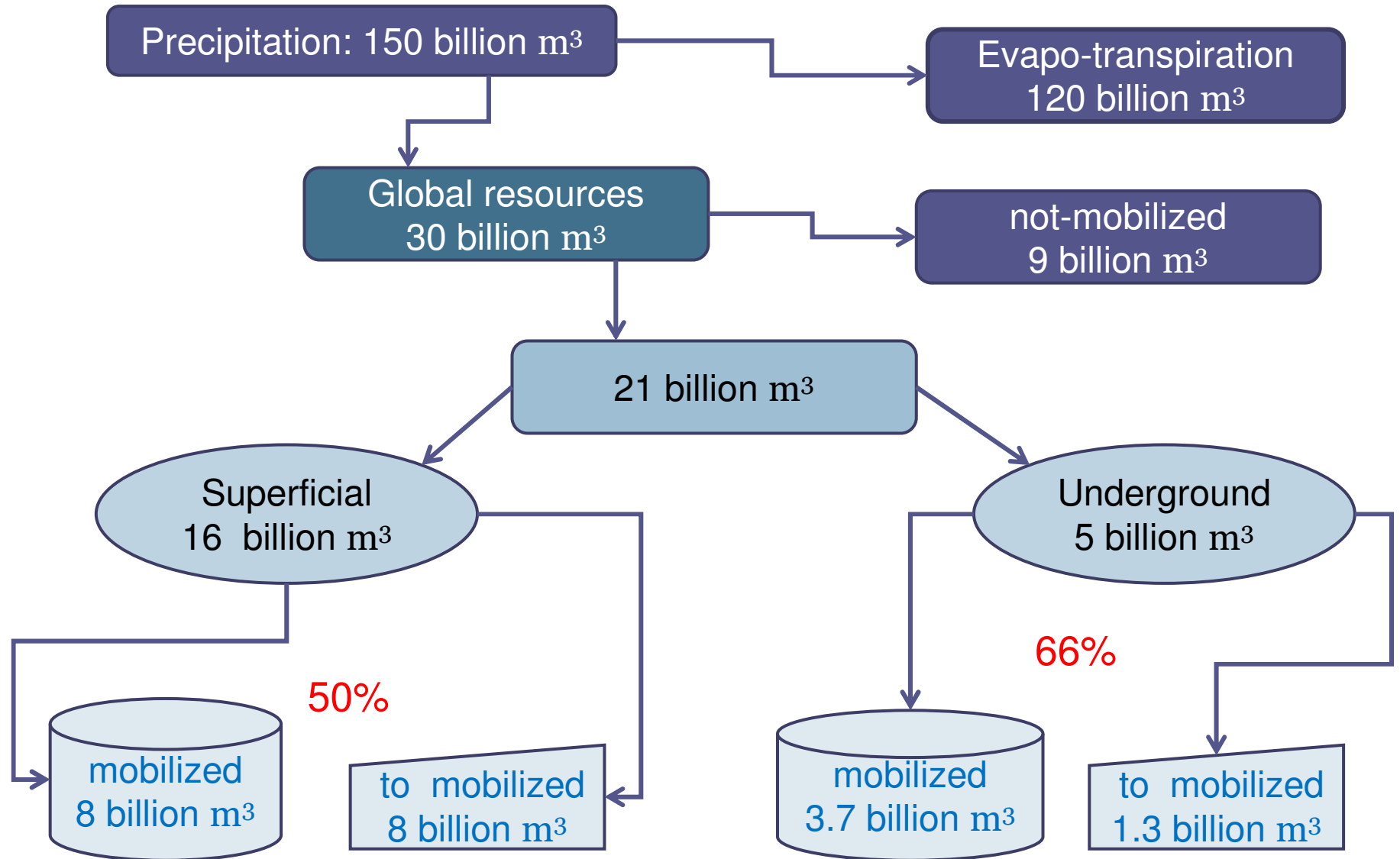
➤ More than half of these resources are concentrated in the north over an area covering 7% of the national territory


In addition, water supplies are very irregular in time and in space.

Due to its geographical position, Morocco is characterized by a climate with strongly contrasting rainfall dominated by a highly irregular in space and time.



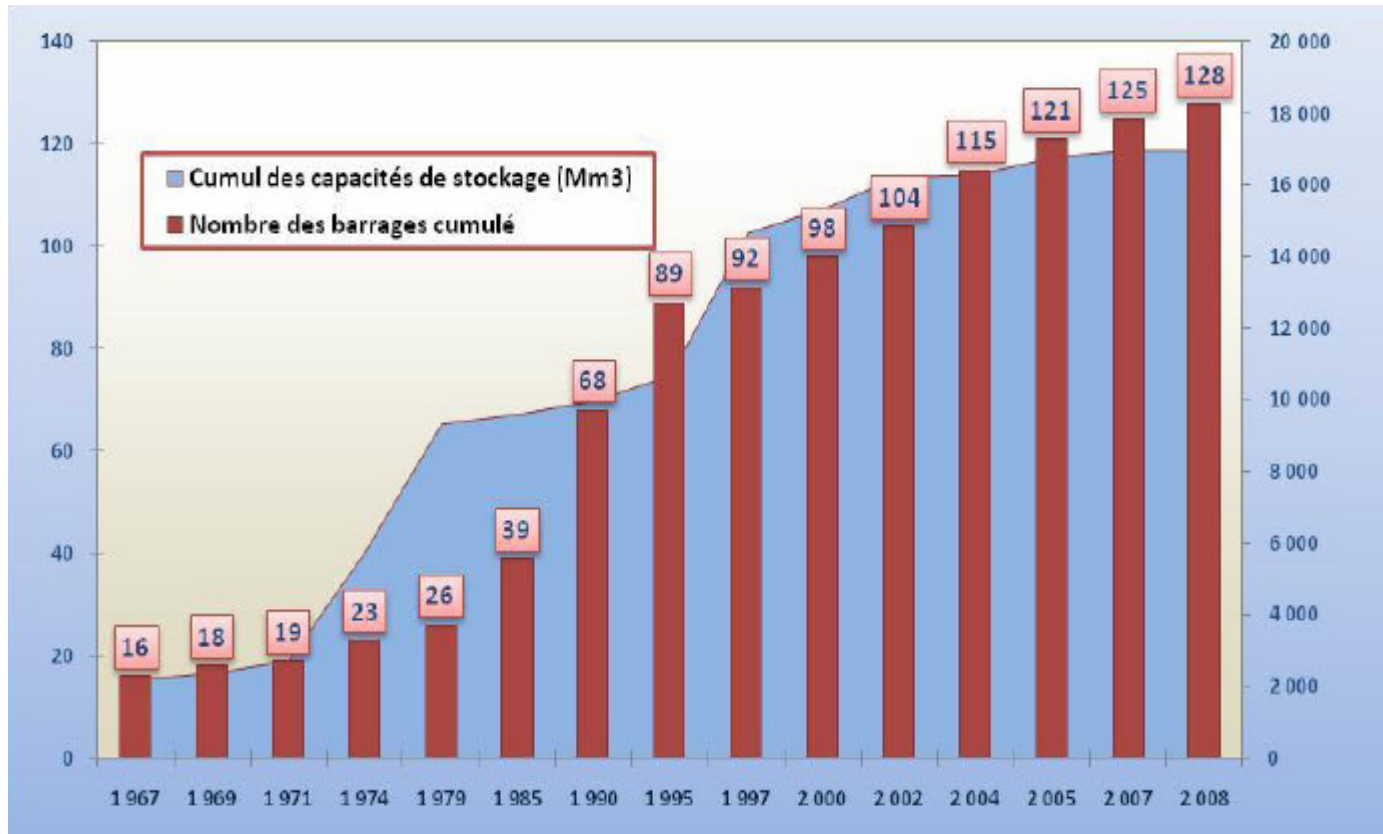
POTENTIAL AND STATE OF WATER RESOURCES





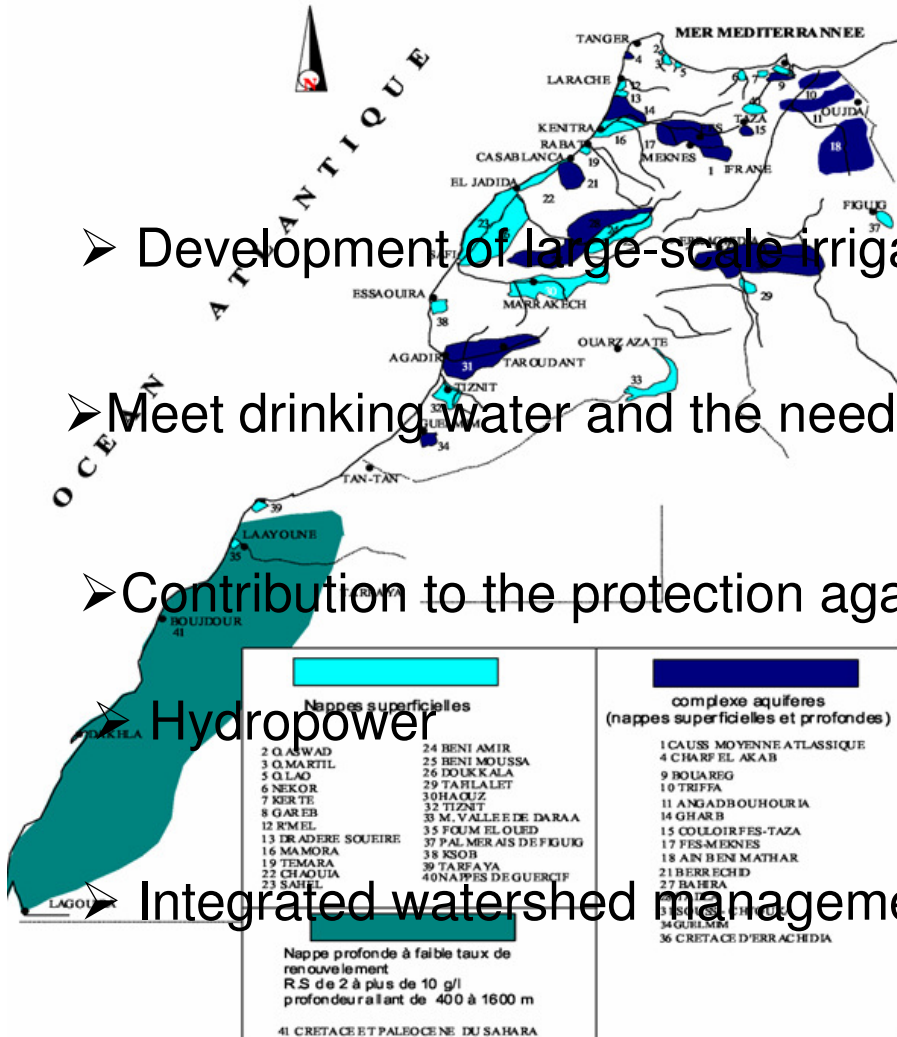
Aware of the strategic issues related to water sector, Morocco has implemented a strategy based on the development of water resources, by:

- Construction of large dams and water transfer structures.
- Development of technical skills and applied scientific research.
- A long-term planning for a long-term visibility (20 to 30 years).
- Developed regulatory and institutional framework.



This policy helped to develop important Hydraulic infrastructure: **128 large dams with a capacity of 18 billion cubic meter**





➤ Development of large-scale irrigation.

➤ Meet drinking water and the need for industrial and tourist water.

➤ Contribution to the protection against flooding.

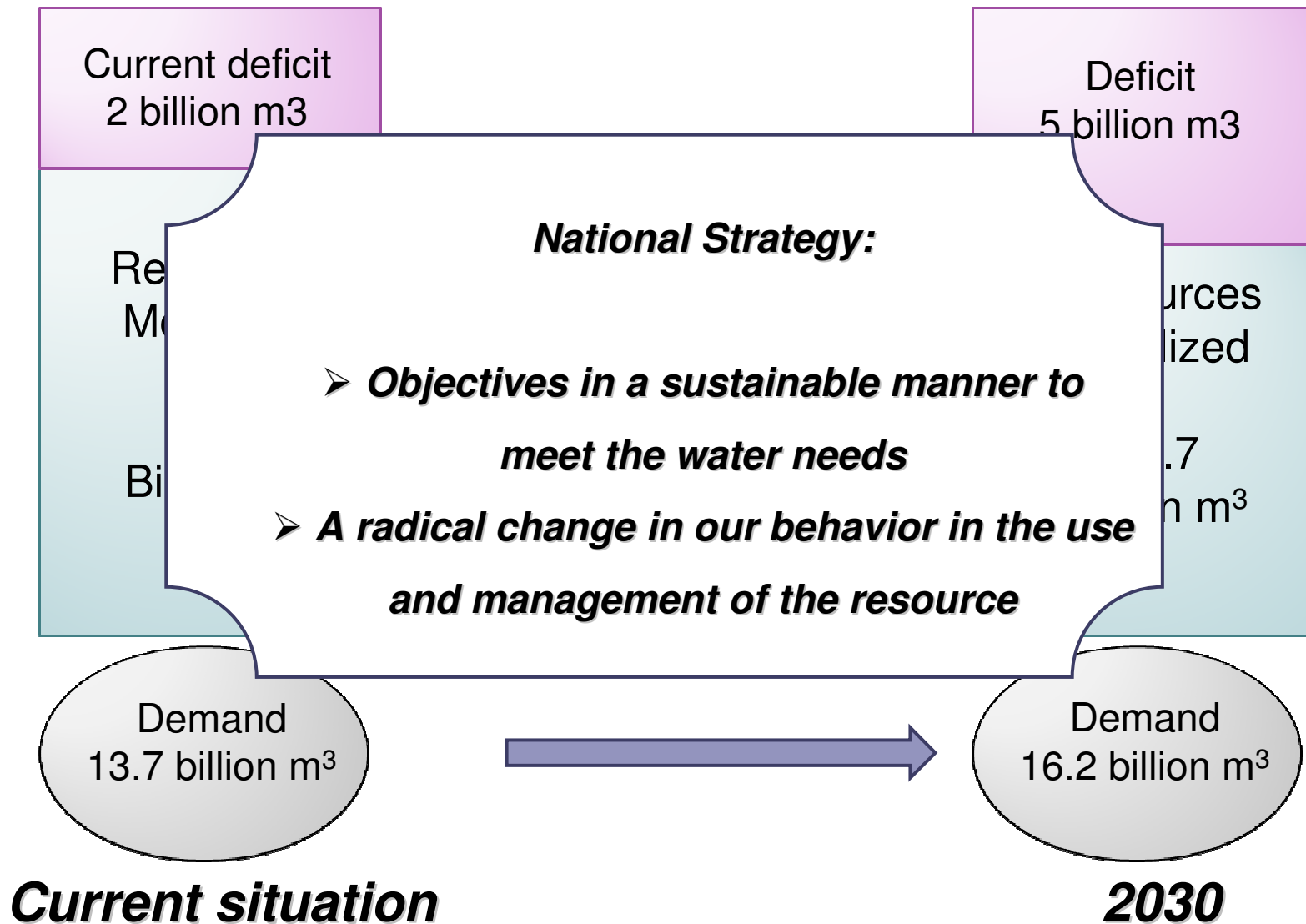
➤ Hydropower

➤ Integrated watershed management

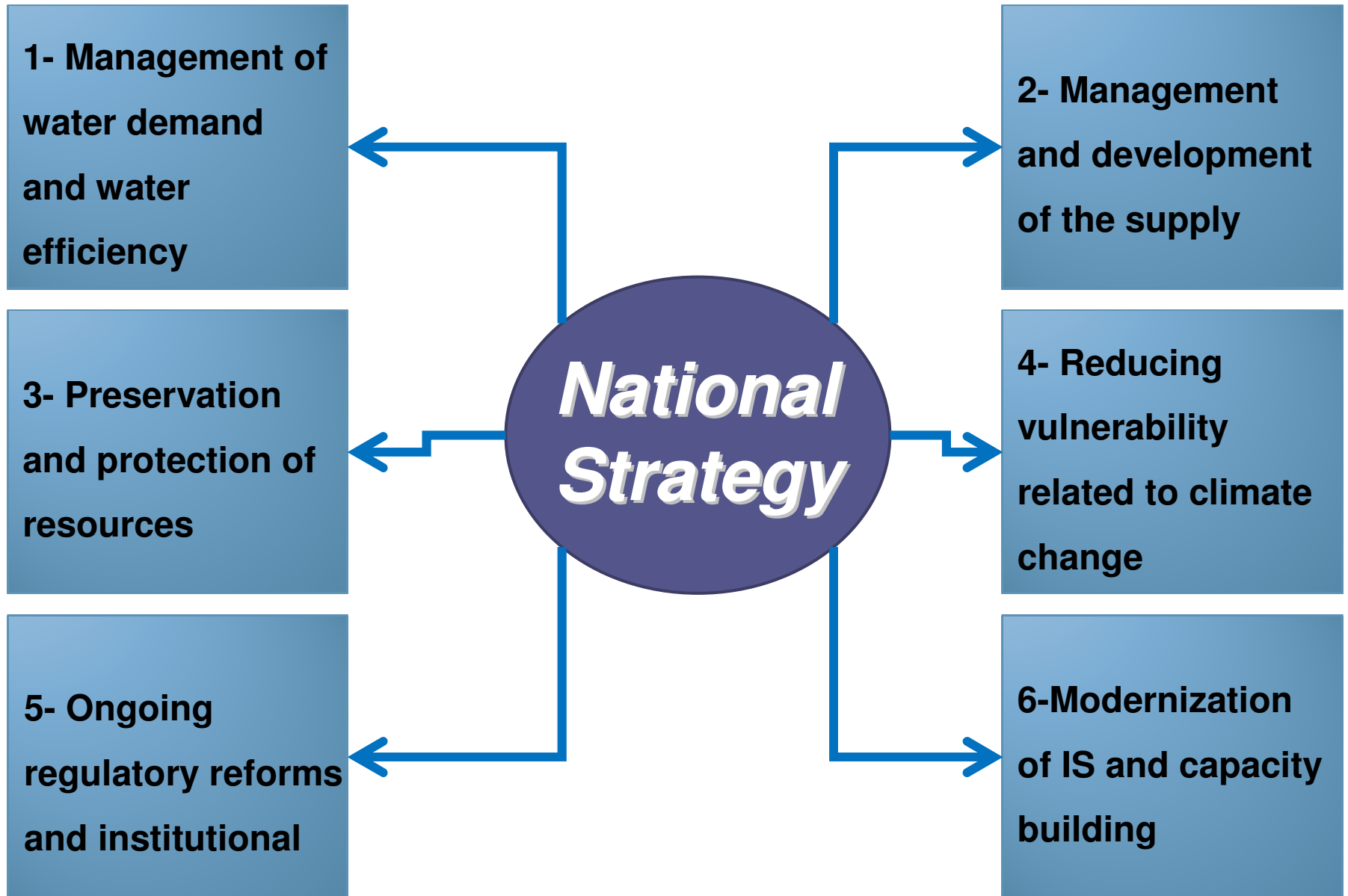
The groundwater resources are spread over a thirty major aquifer systems.

Only half of this potential is considered mobilized.

WATER BALANCE

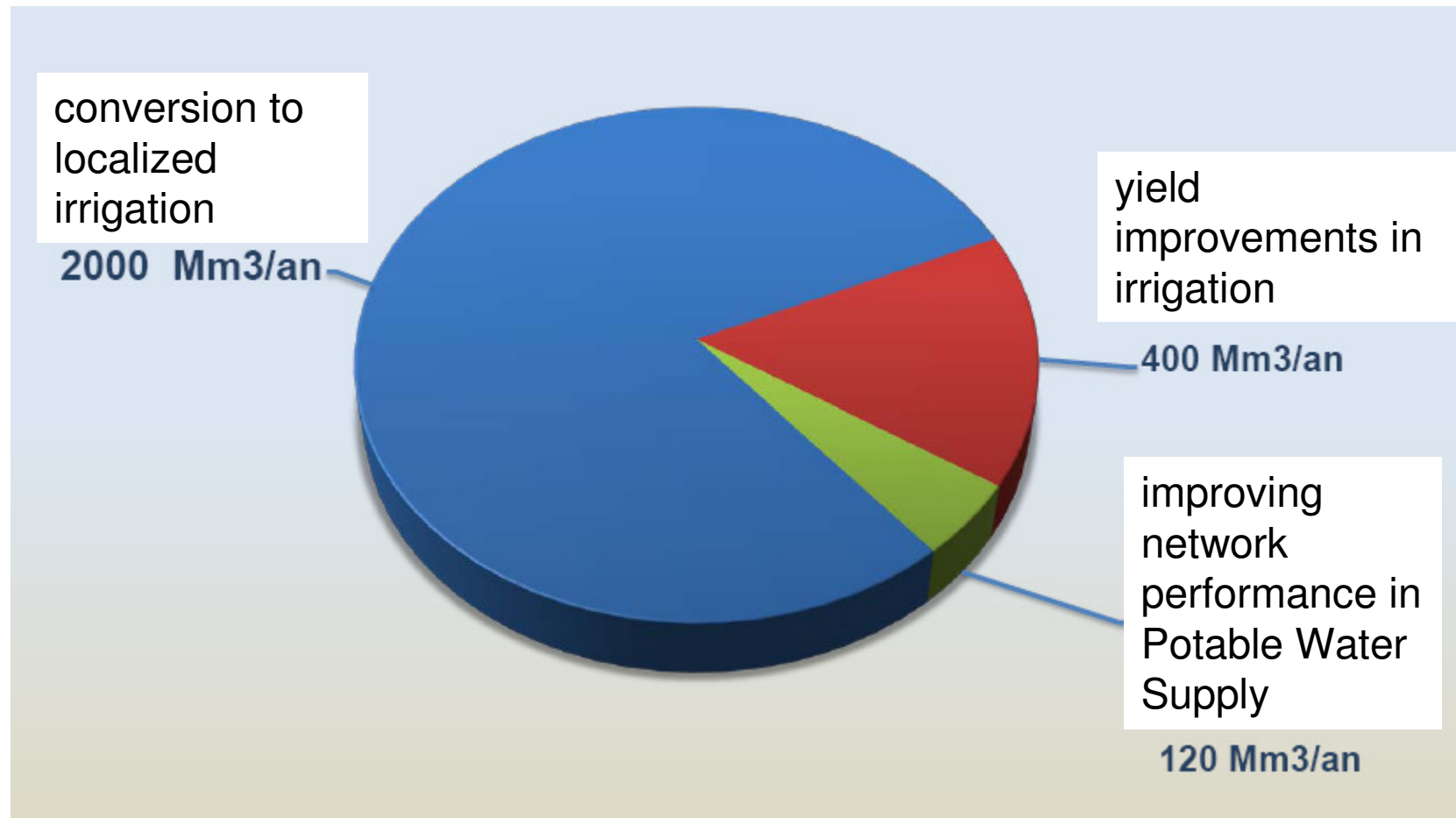


MAJOR STRATEGY



1- Management of water demand and water efficiency

> *Economics of 2.5 billion m³/year*



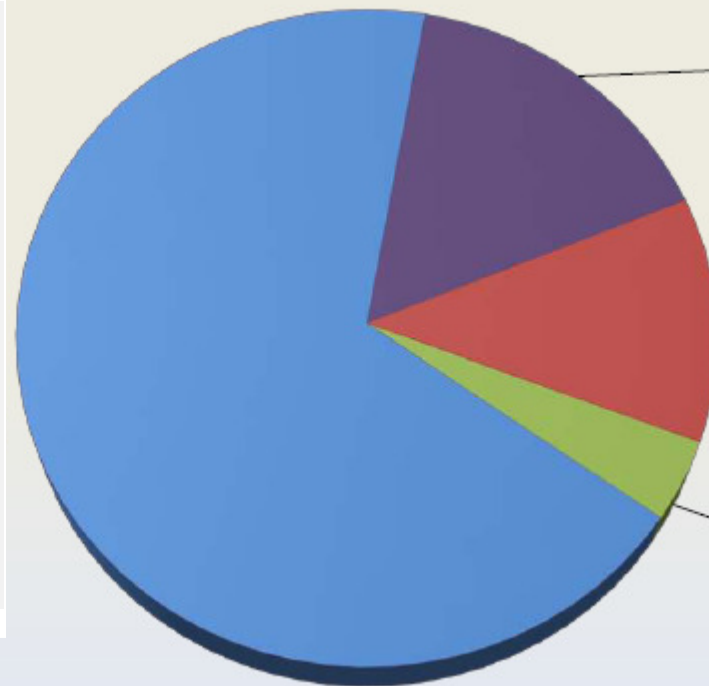
2- Management and development of the supply

> *Mobilization of 2.5 billion m³/year*

water surface

Mobilization of 1.7 billion m³

- 60 major dams
- 1000 small dams
- North-South transfer: 800 M m³



Desalination of sea water

400 Millions m³

Reuse of treated wastewater

300 millions m³

Capture rainwater

3- Preservation and protection of resources

The groundwater resources: strategic reserves

Protection of the quality of water

4- Reducing vulnerability related to climate change

Improved protection against flooding

Fight against the effects of drought

5- Ongoing regulatory reforms and institutional

Review of the law 10-95 and its implementing regulations, in order to enrich and adapt them to new requirements for the development of water resources.

6-Modernization of IS and capacity building

Development of applied scientific research

Capacity building and training

Development of information systems

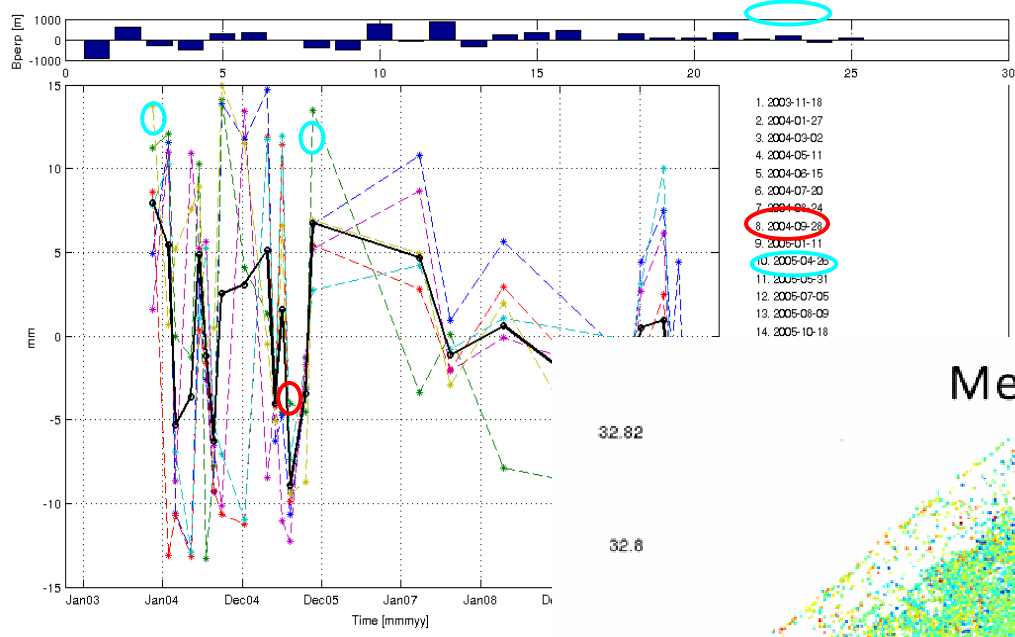
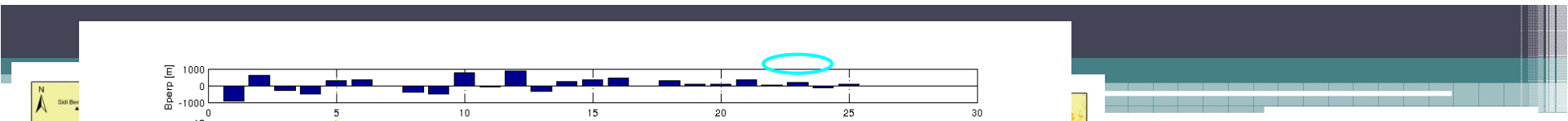


Conclusion

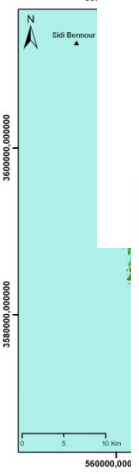
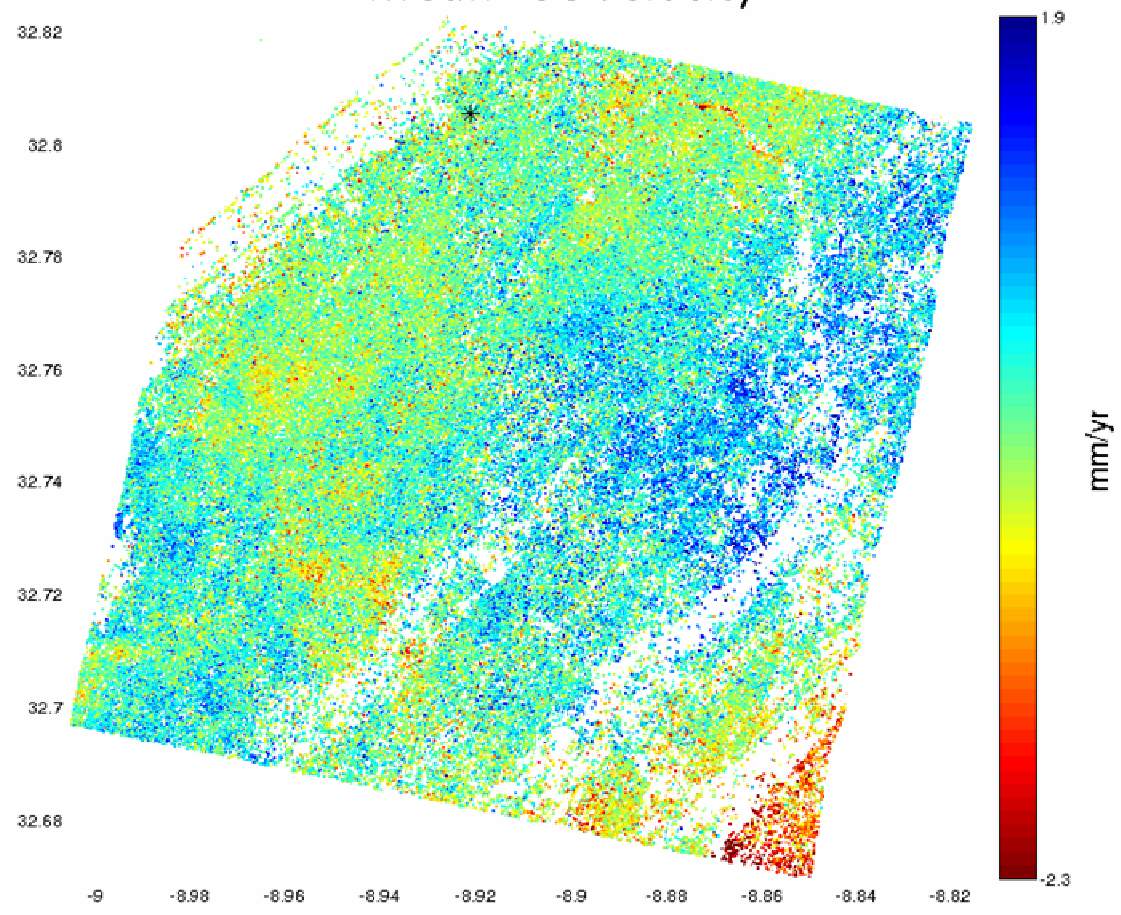
WATER IN MOROCCO

Many accomplishments and achievements

But also, more CONSTRAINTS AND CHALLENGES



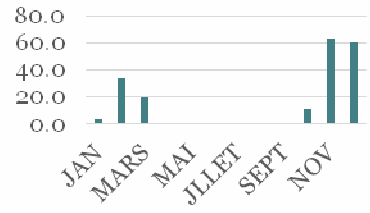
Mean LOS velocity



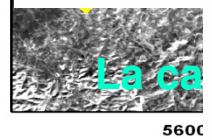
2003



2005



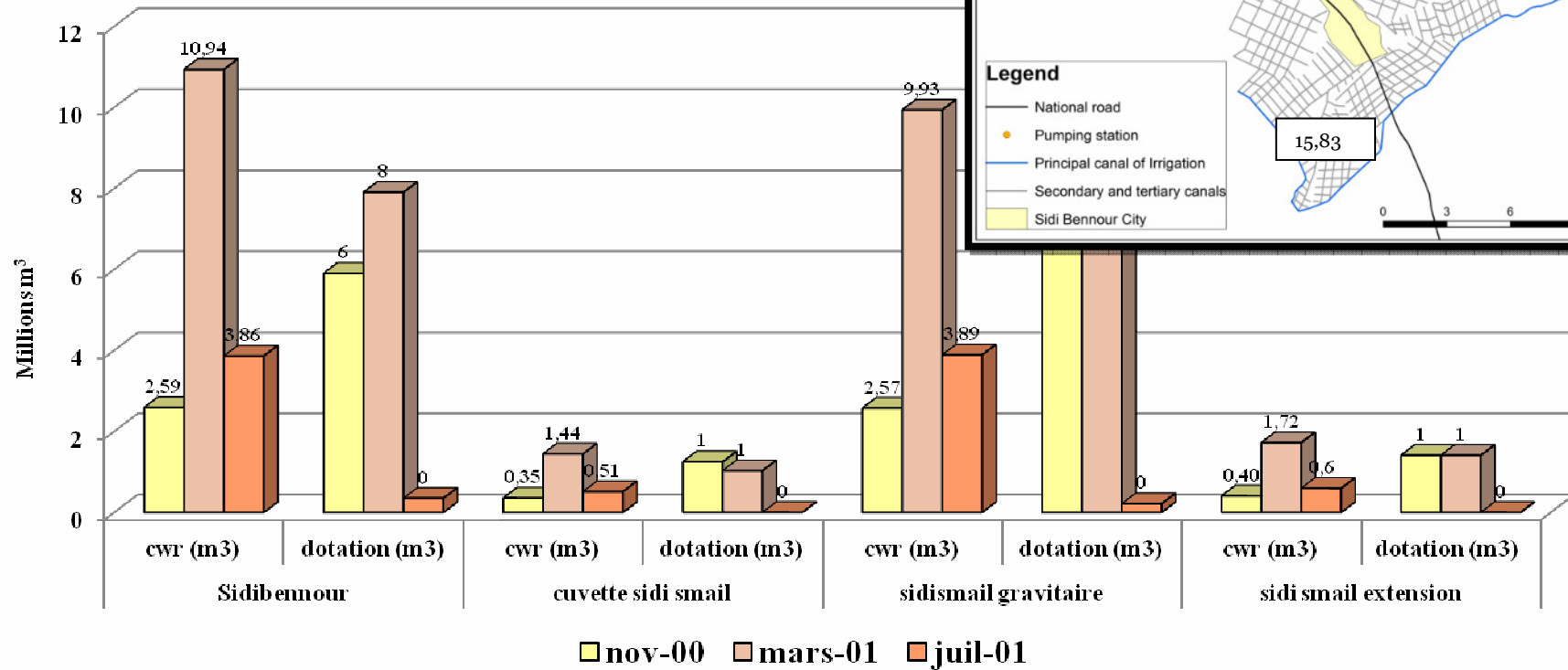
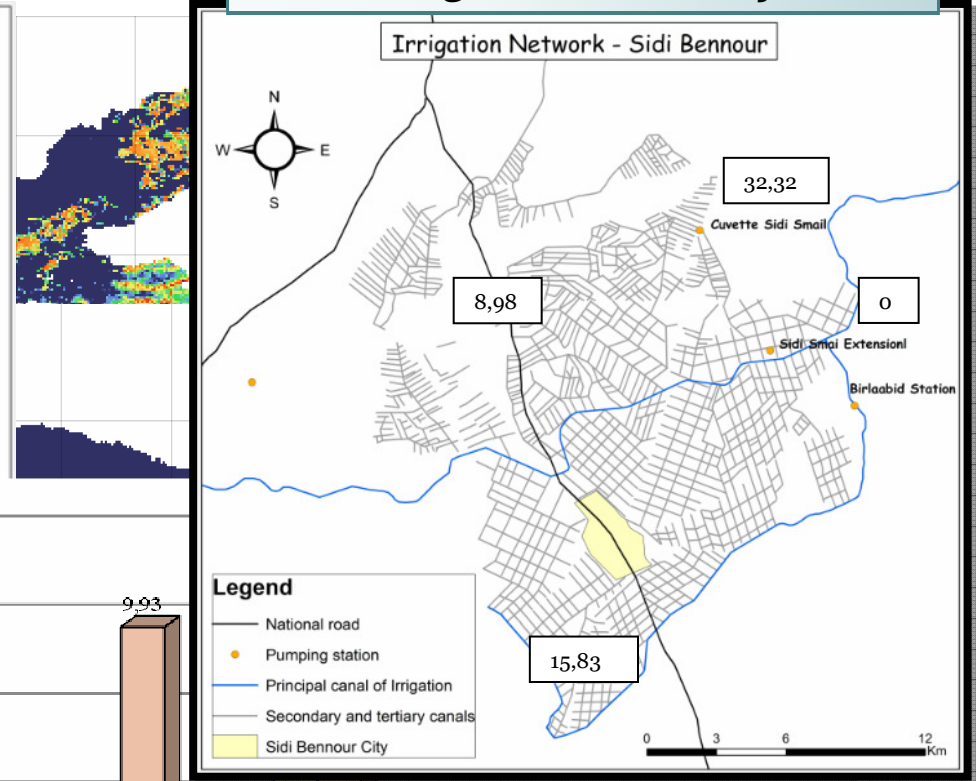
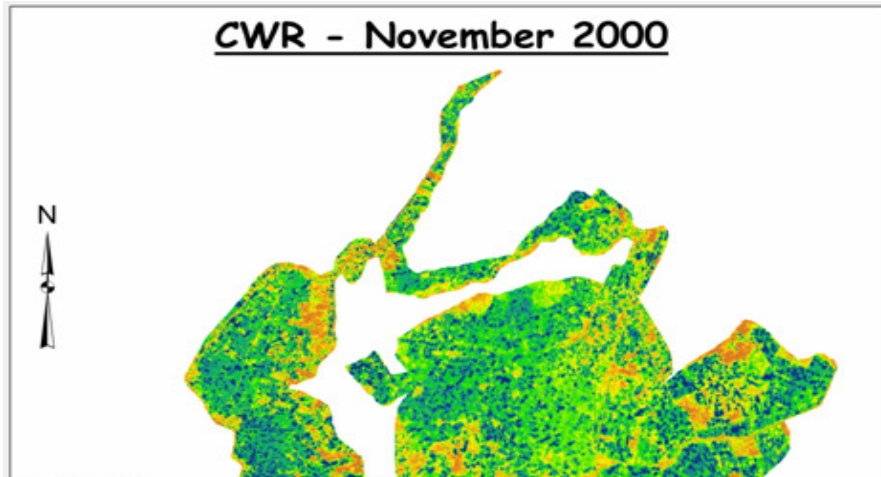
map of



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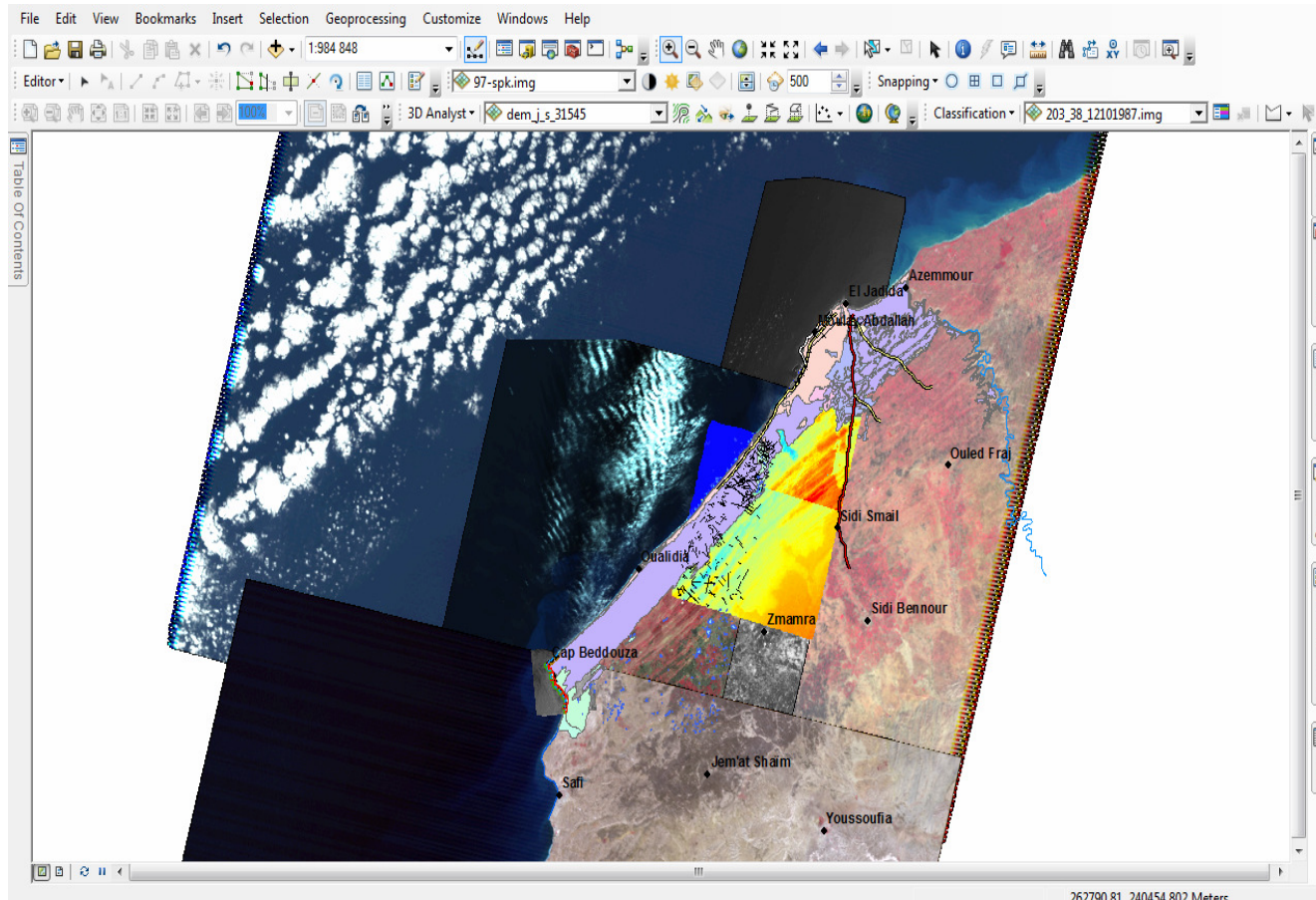
SEBS daily evapotranspiration for the Om Er Rabia basin

Irrigation efficiency



Investigations at different scales will provide information for decision support.

It will focus on all types of work related to exploration and a optimal management of water resources



- PHD_PROJECT.gdb
 - Forages
 - Forages
 - Géologie
 - Couches
 - Stratigraphie
 - Stratigraphie_SpatialJoin
 - Structural
 - Géomorphologie
 - Corniches
 - Crêtes_dunaires
 - Falaises_mortes
 - Karst_MP
 - Karst_Orographie
 - Plateaux
 - Talus
 - Vallées
 - Hydrographie_Souterraine
 - Aquifères
 - Piezométrie
 - Hydrographie_Superficielle
 - Cours_eau
 - Plans_eau
 - Puits
 - Sources_eau
 - Hypsométrie
 - Courbes_Niveaux
 - Dépressions
 - Ligne_Côte
 - Points_Côtés
 - Pédologie
 - Pédologie
 - Routes
 - Routes
 - Stations_Climatiques
 - Stations_Climatiques

THANK YOU

